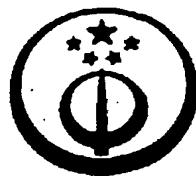


[19]中华人民共和国专利局

[51]Int.Cl<sup>6</sup>

B41J 25/304

B41J 25/308 B41J 2/145



## [12]发明专利申请公开说明书

[21]申请号 97120313.X

[43]公开日 1998年6月10日

[11]公开号 CN 1184035A

[22]申请日 97.12.4

[74]专利代理机构 中原信达知识产权代理有限责任公司

[30]优先权

代理人 朱登河

[32]96.12.4 [33]KR[31]U96-4557 6

[71]申请人 三星电子株式会社

地址 韩国京畿道

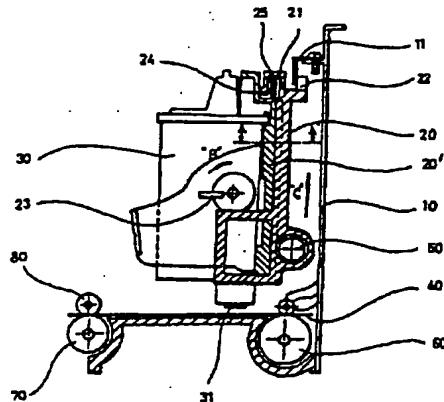
[72]发明人 朴庆虎

权利要求书 1 页 说明书 4 页 附图页数 3 页

[54]发明名称 在喷墨打印机中根据打印纸厚度调节喷墨头间隙的装置

[57]摘要

一种在喷墨打印机中根据打印纸厚度调节喷墨头间隙的装置，其包括：一个在打印纸的垂直方向移动喷墨头的单元，它可依据所述喷墨头的喷嘴与打印纸之间的距离来调节喷墨头间隙。



在喷墨打印机中根据打印纸厚度  
调节喷墨头间隙的装置

5

本发明涉及一种喷墨打印机，更具体地说涉及一种在喷墨打印机中根据打印纸厚度调节喷墨头间隙的装置，它改进了不良的打印状况，如溅墨和打印机喷墨头的喷嘴倾斜，并防止了析像偏差(resolution deviation)，这是利用一个杠杆的简单作用来在打印纸和打印机喷墨头之间保持一恒定间隙来实现的；在打印纸比普通纸张厚时就造成不良打印状况。

10

15

总的来说，喷墨打印机具有一个安装在一滑架上的打印机喷墨头。这样，从一个盒中把打印纸取出来，然后由一个拾取辊将其输送到打印机喷墨头的喷嘴处。

20

另一方面，常规打印机从打印机喷墨头底部的喷嘴中把墨喷到设置在打印机喷墨头下面的打印纸上。

25

这样，在打印机的喷墨打印头和打印纸之间就有一个间隙。然而，在常规打印机中，没有任何能调整该间隙的装置。即使在常规打印机之中设有能调整该间隙的装置，但其结构不足以调节该间隙。

图1和2示出现在技术的喷墨打印机的喷墨头间隙。

30

图1示出现有技术喷墨打印机的打印部件。如图1所示，喷墨打印机利用一个导轨9和一个滑架轴5把一个滑架2固定到一机架1上。另外，设置一个钮8和一个滑板10，使打印机喷墨头可左右移动。

35

在上述结构的喷墨打印机中，通过拾取辊11把打印纸从一馈送辊12处输往喷墨头3的底部。

因而，若把打印纸输送到打印机喷墨头3的底部，从喷墨头3的喷嘴中喷射的墨就在打印纸上打印出字符和图形。

5 节喷墨头和打印纸之间的距离来提高打印清晰度，改善打印状况。

10 本发明的另一目的是提供一种喷墨头间隙调节装置，在喷嘴随喷墨头间隙的调节而相对于打印纸倾斜的状态下，它可以防止打印图像的析像偏差。

15 为达到上述目的，本发明提供一种在喷墨打印机中根据打印纸厚度调节喷墨头间隙的装置，其包括：一个在打印纸的垂直方向移动喷墨头的单元，它可依据所述喷墨头的喷嘴与打印纸之间的距离来调节喷墨头间隙。

20 下面的说明和附图仅是解释性和示例性的，而不是限制性的。

25 为阐述本发明，现提供下列附图：

15 图1是现有技术打印部件的示意图；

图2是现有技术喷墨打印机的喷墨头间隙调节装置的示意图；

图3是本发明喷墨打印机的喷墨头间隙调节装置的示意图；及

图4是沿图3中A-A线的剖视图。

20 现根据附图详细阐述本发明的优选实施例。

25 图3和4示出本发明喷墨打印机的喷墨头间隙调节装置。

30 一导轨11把喷墨打印头固定在一个机架10的顶部，从而可移动一滑架20。

35 在喷墨打印机的喷墨头间隙调节装置中，一个辅滑架20'在滑架20的前部形成一个滑孔(未示)，以便移动其中装有喷墨头30的滑架20，从而辅滑架20'可安装在滑架20之上。在辅滑架20'的侧部安装有一个凸轮杠杆23来调节喷墨头间隙。一导引滑件22与滑架20设置成一体，以便在打印操作中移动滑架20。为了调节喷墨头间隙，在弹簧导件25和辅滑架20'之间安装有一个压缩弹簧。

35 这样，由馈送辊60送出的打印纸传送到喷墨头30的喷嘴底部时，喷嘴31就把墨喷到穿过一射出辊70和一行星轮80之间的打印纸上。

35 凸轮杠杆23设置在辅滑架20'的侧部，当所使用的打印纸比普通打

说 明 书 附 图

图 1

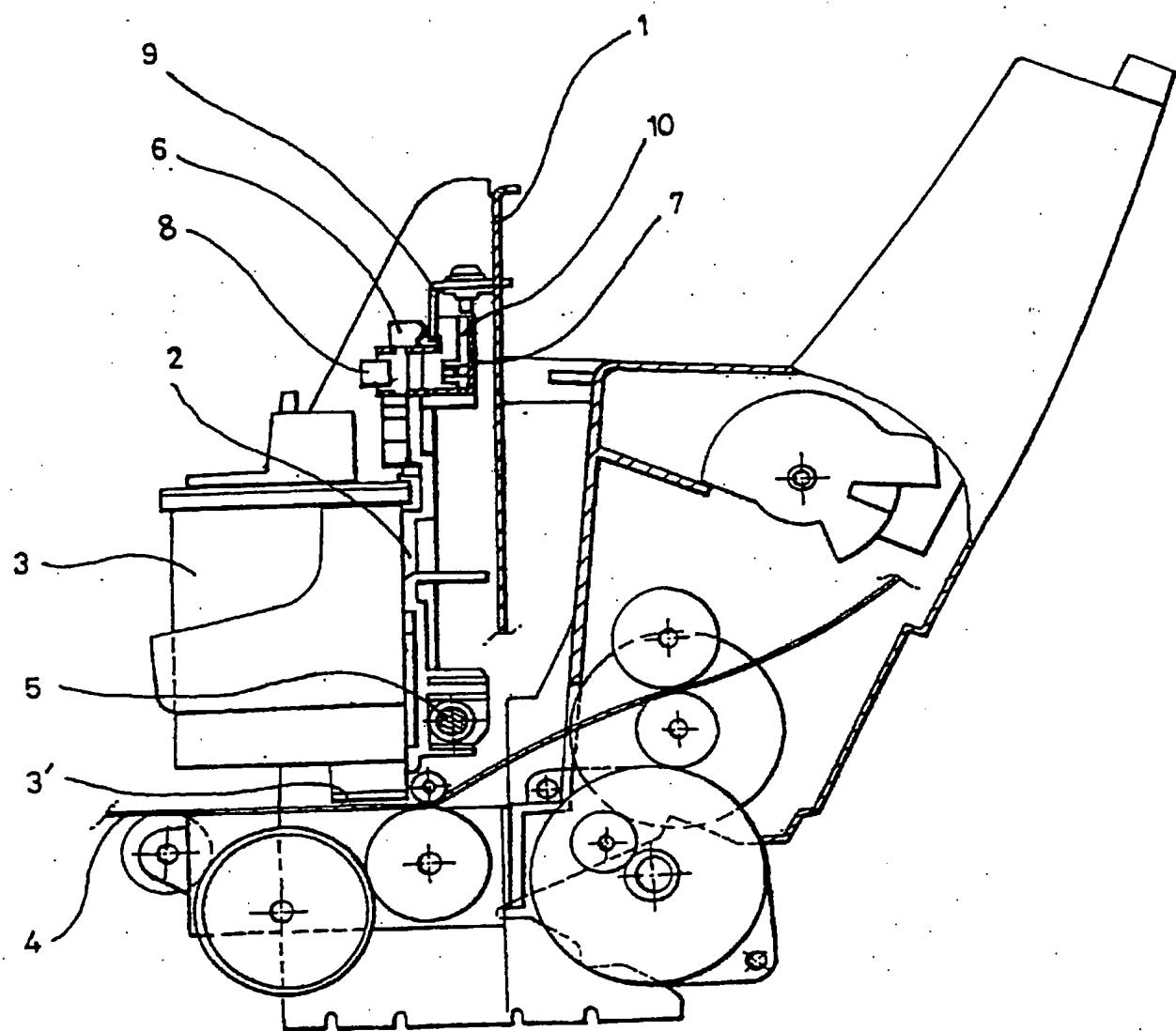


图 3

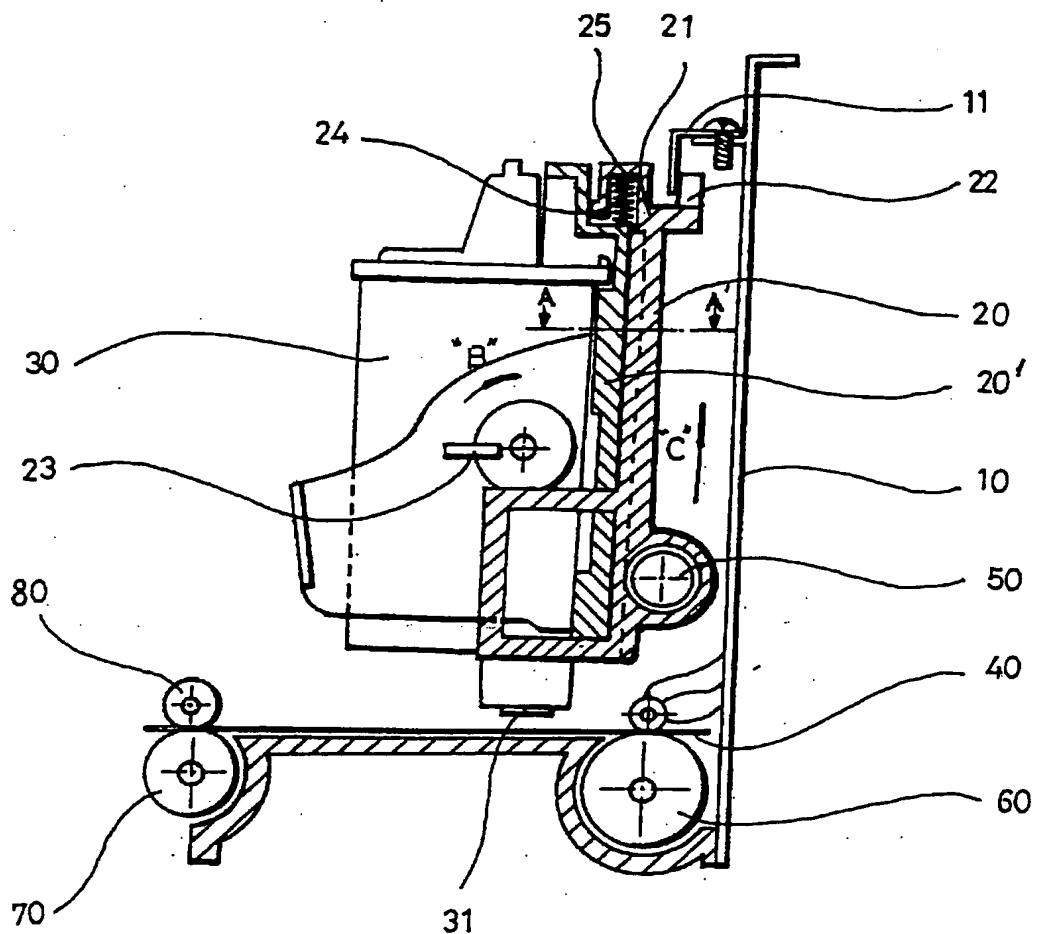
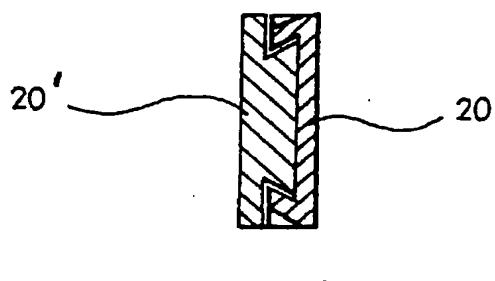


图 4



A - A'

English Version of D1

K0361CN 03/534

APPARATUS FOR ADJUSTING HEAD GAP DEPENDING UPON  
THE THICKNESS OF PRINTING PAPER IN INK JET PRINTER

BACKGROUND OF THE INVENTION

Field of the Invention

5 The present invention relates to an ink jet printer, and more particularly to an apparatus for adjusting a head gap depending upon the thickness of printing paper in the ink jet printer, which improves a poor printing state such as spread, stain with ink and inclination of a nozzle of the printer  
10 head, and prevents resolution deviation by keeping a constant gap between the printing paper and the printer head through a simple operation by means of a lever, the poor printing state being caused when the printing paper is thicker than general paper.

15 Discussion of Related Art

In general, the ink jet printer has a printer head which is mounted in a carriage. Thus, the printing paper is ejected from a cassette and is then transferred to the nozzle of the printer head by a pick-up roller.

on the printing paper by the ink jetted from the nozzle of the printer head 3.

However, in the ink jet printer of the prior art, there may arise a problem that there is provided no device to adjust the gap mentioned in the above, even though the gap is made between the printer head and the printing paper. Thus, if a print operation is performed in the paper being twice or three times as thick as the general paper, the gap therebetween is not constant. Thereby, the spread or stain with the ink is made on the printing paper and the printing resolution is poor accordingly.

Fig. 2 illustrates a head gap adjusting apparatus of the ink jet printer according to the prior art. In Fig. 2, the carriage 20 is fixed in the chassis 10 by means of the guide rail 11 and the carriage shaft 50. A guide slider 22 is formed in the one-body with the carriage guide 21 to thereby move the carriage 20 in the right and left direction through a contact with the guide rail 11.

In Fig. 2, in order to adjust the gap of the printer head 30, a compressing spring 24 is mounted between the carriage guide 21 and the spring guide 25.

Further, so as to move the carriage guide 21 to the forward and backward direction, a cap-shaped cam lever 23 is

the start point and the end point of the printing operation through the feed roller.

Also, in the ink jet printer of the prior art, in case of adjusting the head gap by rotating the carriage depending upon the deviation of the print operation, there is provided another problem that the efficiency in the print operation can be reduced because of the resolution deviation when the print operation is performed in the thick printing paper such as an envelope and a postcard.

10

#### SUMMARY OF THE INVENTION

Therefore, an object of the present invention is to provide a head gap adjusting apparatus capable of enhancing print resolution by adjusting the distance between a printer head and printing paper, and of improving the printing state.

5

Another object of the present invention is to provide a head gap adjusting apparatus for preventing resolution deviation of printing image when the print operation is performed under a situation that the nozzle is inclined against the printing paper according to the adjustment of the head gap.

20

Additional features and advantages of the invention will be set forth in the description which follows, and in part

Fig. 1 illustrates a printing part of a general ink jet printer;

Fig. 2 illustrates a head gap adjusting apparatus of the ink jet printer according to the prior art;

5 Fig. 3 illustrates a head gap adjusting apparatus of the ink jet printer according to the present invention; and

Fig. 4 is a cross-sectional diagram along a line A-A' of Fig. 3.

#### DETAILED DESCRIPTION OF PREFERRED EMBODIMENT

10 Reference will now be made in detail to the preferred embodiments of the present invention, examples of which are illustrated in the accompanying drawings.

Figs. 3 and 4 illustrate a head gap adjusting apparatus of the ink jet printer according to the present invention.

5 The ink jet printer is fixed by a guide rail 11 so as to transfer a carriage 20 onto the top part of a chassis 10.

In structure of the head gap adjusting apparatus of the ink jet printer, a sub carriage 20' forms a sliding hole (not shown) in the front part of the carriage 20 so as to move the carriage 20 in which the printer head 30 is mounted, so that the sub carriage 20' can be installed in the carriage 20. A cam lever 23 is fixed in the side part of the sub carriage 20'.

the top direction thereof. The compressing spring 24 is  
pressed by the raise of the sub carriage 20' accordingly.

That is, the spring guide 25 is formed in a one-body with  
the carriage 20 on the axis of the carriage shaft 50 to  
5 thereby support the compressing spring 24.

Further, since the sub carriage 20' presses the  
compressing spring 24, it is moved to the C direction and the  
printer <sup>head</sup> mounted in the sub carriage 20' is also moved to  
the C direction, so that the nozzle is moved to the C  
10 direction.

In the above, when the print operation is performed in  
the envelope or the postcard thicker than the general paper,  
if the cam lever 23 is turned in 90 degree, the nozzle is also  
moved to the C direction. Thereby, the head gap is adjusted  
15 and made constantly.

Accordingly, in the head gap adjusting apparatus of the  
ink jet printer according to the present invention, the cam  
lever properly moves the carriage when the thick paper like  
the envelope or postcard is used therein, thereby constantly  
20 keeping the head gap, regardless of the thickness of the  
printing paper, and thereby obtaining the same resolution as  
that of the general paper. Thus, there is provided in the  
present invention an efficiency to improve the printing state

What is claimed is:

1. An apparatus for adjusting head gap depending upon the thickness of printing paper in an ink jet printer comprising:

5 a unit for moving a printer head into a vertical direction of said printing paper so as to adjust said head gap corresponding to a distance between a nozzle of said printer head and said printing paper.

2. The apparatus for adjusting head gap as claimed in  
10 claim 1, further comprising:

<sup>(20)</sup>  
a carriage <sup>(20)</sup> fixed in a chassis by means of a guide rail <sup>(10)</sup>  
and a carriage shaft; <sup>(50)</sup>

<sup>(20)</sup>  
a carriage guide having a spring guide <sup>(25)</sup> mounted in one <sup>(25)</sup>  
edge of said carriage and supported by a compressing spring; <sup>(25)</sup>

15 and

a guide slider for receiving elastic power of said compressing spring, said guide slider being arranged to be moved in the right and left direction thereof.

3. The apparatus for adjusting head gap as claimed in  
20 claim 2, wherein a sliding hole into which a sub carriage is

Abstract of Disclosure

An apparatus for adjusting head gap depending upon the thickness of printing paper in an ink jet printer. The apparatus comprises a unit for moving a printer head into a vertical direction of the printing paper so as to adjust the head gap corresponding to a distance between a nozzle of the printer head and the printing paper.